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SKIN LESIONS IN DOMESTIC ANIMALS CAUSED BY ELAEOPHORA, RHABDITIS & PARAFILARIA

Prepared from Helminthological Abstracts 1932-1969
by C.W.Gordon, BA.

ANNOTATED BIBLIOGRAPHY NO. 5

COMMONWEALTH BUREAU OF HELMINTHOLOGY

North American Veterinarian.

KEMPER, H. E., 1938.—"Filarial dermatosis of sheep." 19 (9), 36-41.

An account of filarial dermatosis in sheep caused by *Elaeophora schneideri* in Catron County, New Mexico, is given by Kemper. This disease, commonly called "sore head," only occurs in ewes 2 to 6 years old. The symptoms and lesions are described. The recovery of microfilariae from the lesions on the head, leg and belly, and of adult parasites from the blood vessels of affected sheep is recorded. Local treatment was ineffective, but Fouadin in daily doses of 4 c.c. intramuscularly was found to be specific when at least 88 c.c. had been administered. J.W.G.L.

Report of the Chief of the Bureau of Animal Industry. United States Department of Agriculture.

UNITED STATES BUREAU OF ANIMAL INDUSTRY, 1945.—"Livestock and poultry parasite investigations." Year 1944-1945, pp. 32-39.

The adults of *Elaeophora schneideri* live in the arteries and the larvae are located in the skin of sheep. Three antimony compounds, including tartar emetic injected in 0·3 gm. doses weekly for eight weeks, induced complete healing of the lesions.

American Journal of Veterinary Research.

KEMPER, H. E. & ROBERTS, I. H., 1946.—"Treatment of filarial dermatosis of sheep with antimony compounds." 7 (24), 350-354.

Filarial dermatosis in sheep due to the microfilariae of *Elaeophora schneideri*, first recorded in New Mexico in 1933, is now widespread in the western and southern areas of U.S.A. Kemper & Roberts have found that both anthiomaline and Fouadin give promising results in single large doses but recommend tartar emetic in glucose as an efficient and inexpensive preparation. Eight weekly injections of tartar emetic (0·3 gm., 4 c.c. of 50% glucose with aqua dest. ad 30 c.c.) produced complete healing in 30 days when given either intravenously or intramuscularly. Neither adults nor microfilariae were recovered at autopsy. R.T.L.

Transactions of the Royal Society of Tropical Medicine and Hygiene

VARMA, A. K., 1953.—"(1) Occurrence of *Elaeophora poeli* in Indian buffalo. (2) Onchocerciasis of the aorta of cattle in India. (3) Stephanofilariasis in cattle in India." [Demonstration.]

Bos bubalus in Assam is recorded as host of *Elaeophora poeli* for the first time. In Bihar (India), *Bos indicus* is fairly frequently infected with *Onchocerca armillata* and *Stephanofilaria assamensis*. *S. assamensis* is very common in the plain cattle of Assam. R.T.L.

Cornell Veterinarian.

DOUGLAS, J. R., CORDY, D. R. & SPURLOCK, G. M., 1954.—"*Elaeophora schneideri* Wehr and Dikmans 1935 (Nematoda, Filarioidea) in California sheep." 44 (2), 252-258.

Nematode larvae were present in scrapings of dermatosis on the head of a ewe from Sutter County, California and of three ewes from Lakeview, Oregon. At autopsy adult *Elaeophora schneideri* were found in the aorta of one animal. The cases reported in sheep previously occurred in Arizona, Colorado, New Mexico and Utah. R.T.L.

North American Veterinarian.

SMITH, H. C., LOVELL, V. E. & REPPERT, R. F., 1954.—"Filarial dermatosis of sheep." 35 (8), 588-589.

Filarial dermatosis caused by migrating larvae of *Elaeophora schneideri* is reported in sheep in Nebraska, with a detailed description of the disease. M.McK.

Journal of the American Veterinary Medical Association.

JENSEN, R. & SEGHETTI, L., 1955.—"Elaeophoriasis in sheep." 127 (945), 499-505.

Microfilarial lesions in the skin of the head and feet, and in the mucous membranes of the eyes, mouth and nasal cavities of 18 range ewes, were found associated with adult *Elaephora schneideri* which were located in the arteries supplying the affected tissues. Although adult *E. schneideri* were widely distributed in the arterial system microfilarial lesions were found only in the membranes exposed to an external environment and were usually unilateral. Thrombosis caused by the worms was seen once in the sphenopalatine artery. D.M.

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CONFERENCE ON PARASITES AND PARASITIC DISEASES OF DOMESTIC RUMINANTS, Logan, Utah, August 30–31, 1955. Report, 26 pp.

SEGHETTI, L., 1955.—" Elaeophoriasis in sheep." [Abstract.] p. 17.

Zooprofilassi.

MICOZZI, G., 1956.—" L'eleoforiasi negli ovini." 11 (7), 441.

The usual lesions caused by *Elaeophora schneideri*, a parasite of sheep in the western U.S.A., are thickly crusted patches which are devoid of wool and are found particularly on the joints and head, and may be associated with lesions of the eyes, nose and mouth. If proliferative rhinitis is present the nasal cavities may become occluded. The skin lesions normally heal in about three years leaving bald keratinous patches. M.McK.

Journal of the American Veterinary Medical Association.

KEMPER, H. E., 1957.—" Filarial dermatosis of sheep." 130 (5), 220–224.

The microfilariae of *Elaeophora schneideri* in the skin of sheep, in some mountain localities of New Mexico, Colorado and Arizona cause intense itching. The resulting scratching produces raw, bleeding inflammatory patches containing small abscesses especially on the head but also on the face and abdomen. The lesions eventually dry with greyish flaky scales and resemble ringworm infections. Intravenous injections of trichicide, fouadin or anthiomaline destroyed the microfilariae in the skin and the adults in the arteries and the lesions healed within three weeks. A high protein diet should be given before and during treatment which although effective is only palliative as the life-cycle is unknown. R.T.L.

HIBLER, C. P. & ADCOCK, J. L., 1968. "Redescription of *Elaeophora schneideri* Wehr and Dikmans, 1935 (Nematoda: Filarioidea)." *J. Parasit.*, 54 (6), 1095–1098.

Elaeophora schneideri is redescribed on the basis of specimens from *Odocoileus hemionus*, *O. virginianus*, *Ovis aries* and *Cervus canadensis* in the USA. The submedian cephalic papillae are at the margin of the cephalic extremity and not near the oral opening. The 4 inner papillae are larger than the outer, the reverse of the original description. A pair of deirids is located about 500 μ from the cephalic extremity. The posterior extremity has not one but 3 prominent knobs. The oesophagus is divided into muscular and glandular regions. The left spicule has an eyelet-like aperture near its middle and not a constriction as indicated previously, thus making *E. schneideri* easily distinguishable from *E. poeli* and *E. bohmi*. C.W.G.

North American Veterinarian.

CHITWOOD, B. G.—"The association of *Rhabditis strongyloides* with dermatitis in dogs." XIII (6), 35-40, 8 figs., 16 refs. [June, 1932.]

Chitwood records the first American case of *Rhabditis strongyloides* from the skin of dogs.

The parasite is described and illustrated. It was cultivated in nutrient agar but soon died off if the agar was sterile, or if the culture became mouldy. They grew if the pH was 6 to 8 and the temperature between 25° C. and 40° C. He was unable to experimentally infect dogs and believes that the parasite, even as a secondary invader, must be rare.

T.W.M.C.

North American Veterinarian.

CHITWOOD, B. G.—"A nematode, *Stephanofilaria stilesi*, new species, from the skin of cattle in the United States." XV (6), 25-27. [1934.]

The filarial worm recently discovered by Dikmans in skin lesions in cattle in the United States has been compared by Chitwood with the worm *Stephanofilaria dedoesi* which causes similar lesions in Sumatra. The chief grounds upon which a new species is created for the American form are that *S. stilesi* n. sp. has the second row of cephalic spines incomplete and asymmetrical while the vulva is 78 to 90 μ from the anterior end. Chitwood records also the presence of *Rhabditis strongyloides* associated in the skin with *S. stilesi*.

R.T.L.

Revue de Médecine Vétérinaire. Lyon et Toulouse.

BRIZARD, A. & EUZÉBY, J., 1949.—"Un cas de dermatose vermineuse du chien." 100, 82-86.

A dermatitis in an 8-months-old English setter is described and attributed to invasion by the larvae of *Rhabditis strongyloides*. These larvae measured 516–584μ in length by 18μ in width. The cuticle was very finely striated. The mouth had indistinct lips. The oesophagus had two swellings of which the second had a valvular apparatus which differentiated it from that of the larva of hookworm and from microfilariae.

R.T.L.

Journal of the American Veterinary Medical Association.

LEVINE, N. D., MILLER, L. J., MORRILL, C. C. & MANSFIELD, M. E., 1950.—"Nematode dermatitis in cattle associated with Rhabditis." 116 (877), 294-296.

Dermatitis associated with larval and adult *Rhabditis strongyloides* is reported in three cows in Central Illinois. The skin was thickened, dry and scurfy, coarsely wrinkled and depilated. There were numerous pustules 1–10 mm. in diameter containing the nematodes. Recovery was spontaneous without treatment.

R.T.L.

North American Veterinarian.

RHODE, B. A., JASPER, D. E., BAKER, N. F. & DOUGLAS, J. R., 1953.—"The occurrence of *Rhabditis* dermatitis in cattle." 34 (9), 634–637.

A rapidly spreading outbreak of dermatitis in a Holstein dairy in California was associated with the presence of *Rhabditis* sp. in the skin scrapings of red, raw, oedematous areas, partly denuded of hair on the ventral abdomen, the flank, the hind legs and the udder. Tremendous numbers of Rhabditis were also present in the upper layers of the moist rice hull bedding in which there was considerable fermentation.

R.T.L.

Zeitschrift für Tropenmedizin und Parasitologie.

WAGNER, O. & BAUER, F., 1953.—"Dermatitis verminosa durch freilebende Nematoden." 4 (2), 235–242. [English summary p. 242.]

Scab-like lesions located mainly on the head and posterior portion of the body of two hamsters, *Cricetus cricetus*, were attributable to percutaneous invasion by rhabditic larvae of a free-living soil nematode. The adults were found only in the litter of the cages and resembled *Rhabditis teres* although the spicules and papillar arrangement were identical with those of *R. strongyloides*. Attempts to infect hamsters and dogs, even when these animals were suffering from skin diseases, proved negative.

R.T.L.

Journal of the American Veterinary Medical Association.

SCHLOTTHAUER, C. F. & ZOLLMAN, P. E., 1955.—"The occurrence of *Rhabditis strongyloides* in association with dermatitis in a dog." 127 (945), 510–511.

Larvae of *Rhabditis strongyloides* were found associated with a severe dermatitis in a 10-month-old Pointer dog. By treating the infected areas with a 2% solution of chlordane the larvae were killed and the lesions disappeared in about two months. D.M.

M.S.U. Veterinarian. Michigan State University.

CLARK, D. T. & BELDING, S. A., 1956.—"Rhabditic dermatitis in a dog in Michigan." 17 (1), 48, 53.

Clark & Belding report a case of severe and extensive dermatitis of the right thigh of a nursing pointer bitch caused by larvae of *Rhabditis strongyloides*. Four previous cases of dermatitis caused by *Rhabditis* have been reported in dogs, and two in cattle. Caking of infested soil or excrement on the skin appears to be the major contributory factor in this condition. J.M.W.

Acta Parasitologica Polonica.

ŚLUSARSKI, W., MARKIEWICZ, K. & STEFAŃSKI, W., 1956.—"Nowy przypadek dermatitis verminosa u psa spowodowanej inwazją larw *Rhabditis strongyloides* Schneider, 1866." 4 (1/7), 163–174. [French & Russian summaries pp. 171–174.]

Scrapings taken from bare patches formed on the skin of a dog brought to a veterinary clinic in Poland contained larvae which were identified by culturing as *Rhabditis strongyloides*. G.I.P.

LORD, L. H. & McGREGOR, J. K., 1960. "A case of *Strongyloides* dermatitis in Canada." Canadian Veterinary Journal, 1 (3), 111–114.

Lord & McGregor describe a case of acute dermatitis in a two-year-old female Beagle dog in Canada caused by *Rhabditis strongyloides* larvae. Treatment by topical application of Trolene in propylene glycol for three consecutive days was successful. It is possible that the nematodes were originally dormant on the straw of the dog's bedding and were subsequently stimulated to leave by the animal's warmth and the presence of moisture. J.W.S.

LEVINE, N. D., BIRCH, C. L., DOLOWY, W. C. & McKINNEY, R. E., 1963. "*Rhabditis axei*, a pseudoparasitic nematode of the dog." Journal of the American Veterinary Medical Association, 142 (12), 1404–1406.

Larvae and adults of both sexes of *Rhabditis axei* were found in a faecal sample of an Illinois dog. The worm, which was cultured on blood agar at 26°C., is thought to be saprophytic, living on decaying matter in and on the dog. They briefly redescribe the species, listing the synonyms, the most notable being *R. macrocerca*. The posterior end of the male is illustrated. Levine *et al.* suggest that this worm might be more common than generally believed and that it is being misidentified as *Strongyloides stercoralis*. *R. axei* differs from *S. stercoralis* in that both the adults and larvae are found in the faeces, all the larvae are rhabditiform, the worms can be cultured on blood agar plates and all stages have long slender tails. The slender tail also distinguishes the species from *Pelodera strongyloides* which may cause dermatitis in dogs and cattle. M.R.B.

KRUIS, H. A., 1964. "Beiträge zur Kenntnis parasitischer Nematoden. XXIII. Ein neuer Nematode aus dem äusseren Gehörgang von Zeburindern in Ostafrika, *Rhabditis bovis* n.sp. (Rhabditidoidea: Rhabditidae)." *Schweizer Arch. Tierheilk.*, 106 (6), 372–378. [English, French & Italian summaries pp. 377–378.]

A *Rhabditis bovis* n.sp., causing otitis externa in about 10% of zebu cattle in Tanganyika, is described and figured. *R. bovis* is viviparous; females measure 0·996 to 1·082 mm. and males 0·807 to 0·847 mm. in length. Of the species of *Rhabditis* exhibiting temporary parasitism, *R. bovis* is morphologically nearest to *R. clavopapillata*; the differences between the 2 species are tabulated. G.I.P.

SCHWARTZMAN, R. M., 1964. "Rhabditic dermatitis in the dog." **Journal of the American Veterinary Medical Association**, 145 (1), 25–28.

Lesions resembling those of demodectic mange in a 4-year-old dog were caused by *Rhabditis strongyloides*. Criteria by which this can be differentiated from demodectic mange, ringworm, scabies and pyoderma are discussed. L.E-L.

JIBBO, J. M. C., 1966. "Bovine parasitic otitis." *Bull. epizoot. Dis. Afr.*, 14 (1), 59–63. [French summary p. 63.]

Rhabditis bovis is the cause of parasitic otitis in zebu cattle on the Tanzanian coast between Tanga and Dar es Salaam. The nematodes are believed to exist normally in manure and, following a bacterial infection, become established in the ear of cattle. In advanced and neglected cases *Chrysomyia bezziana* lay eggs in the ear and may contribute to the disease. D.W.L.

Indian Veterinary Journal.

GULATI, R. L.—"Filaria haemorrhagica in cattle and its treatment." XI (1), 32-34. [1934.]

Gulati states that filariasis haemorrhagica is fairly common in Indian cattle. The parasite, *Parafilaria multipapillosa*, causes beneath the skin slightly raised nodules which break down to form local haemorrhages. The life history of the parasite is unknown. In severe cases intravenous injections of 100 cc. of 1 per cent. tartar emetic solution are advised, a single injection being usually sufficient. B.G.P.

Philippine Journal of Science.

TUBANGUI, M. A.—"Nematodes in the collection of the Philippine Bureau of Science, II: Filarioidea." LV (2), 115-122. [1934.]

Six species of Filarioidea have hitherto been reported from the Philippines. Tubangui adds 6 new species, viz., *Parafilaria bovicola* n. sp. from skin nodules in native cattle, *Diplotriaena pycnonoti* n. sp. from *Pycnonotus goiavier*, *Serratospiculum thoracis* n. sp. from *Falco ernesti*, *Hamatospiculum otomelarium* n. sp. from *Otomela lucionensis*, *H. leticiae* n. sp. from *Halcyon chloris*, and *H. dicruri* n. sp. from *Dicrurus balicassius*. R.T.L.

JESUS, Z. DE—"Haemorrhagic filariasis in cattle caused by a new species of *Parafilaria*." LV (2), 125-130. [1934.]

Raised nodules on the neck and body of cattle which after some weeks bled profusely have been found to contain female worms described by Tubangui [see previous abstract] as *Parafilaria bovicola*. They were generally seen between December and the following July. All the nodules disappeared completely by September. R.T.L.

PAPERS ON HELMINTHOLOGY published in commemoration of the 30 year jubileum of K. J. Skrjabin and of 15th anniversary of the All-Union Institute of Helminthology. Moscow, 1937.

LOSEV, L. A., EROKHIN, I. P. & NIKANOROV, A. F., 1937.—"Parafilariosis of horses in the territories of the lower Volga." pp. 333-345. [In Russian.]

With parafilariosis in horses in the Saratov area there are associated small subcutaneous haemorrhages, containing microfilariae, which are most prevalent in the summer. Developmental stages attributable to this filaria occur in small flies of the Steppes. Various local and palliative measures for treatment are suggested. R.T.L.

Sovetskaya Veterinariya.

ALEKSANDROV, N., 1939.—[Atypical form of parafilariasis in the horse.] 16 (8), 84–85. [In Russian.]

KULIKOV, N. S. & KLESOV, M. D., 1939.—[Tartar emetic in the treatment of parafilariasis of the horse.] 16 (12), 39–40. [In Russian.]

LUTTER, H., 1940.—"Beitrag zur Diagnose und Biologie des Erregers des Hautblutens ungarischer Pferde." Dissertation, Hannover.

Lutter found that 10 Hungarian horses were afflicted in summer with a mild bloody sweat accompanied by skin nodules in the shoulder region. Blood from the nodules and blood-clots, but not venous blood, contained eggs and larvae of *Parafilaria multipapillosa* in every case. Life-history experiments with various flies, daphnids, and copepods were unsuccessful. [From an abstract in Dtsch. tierärztl. Wschr., 49, p. 471.] B.G.P.

Trudi Bashkirskoi Nauchno-Issledovatelskoi Veterinarnoi Stantsii.

BASHIROV, N. G., 1941.—[Testing of solusurmine and tartar emetic against *Parafilaria multipapillosa* infections in horses.] 3, 190–199. [In Russian: English summary p. 443.]

Zeitschrift für Parasitenkunde.

DASKALOW, P., 1944.—"Beitrag zur Erforschung der Rinderparafilariose." 13 (3), 254–264.

Daskalov gives a detailed description of *Parafilaria bulgarica* n.sp., a widespread infection of the cervical connective tissues of cattle in Bulgaria, and of its pathology and clinical aspects. The scapular, dorsal, thoracic regions and the hindquarters, limbs and knee joint areas may also be invaded. There are yellow-green infiltrations of gelatinous material and small local haemorrhages which constitute a diagnostic sign. Calves and young oxen escape. Infection is highest between 7 and 16 years of age (in cows 11·33%, oxen 19·25% and steers 85·71%). Massive infections are associated with absence of subcutaneous fat. R.T.L.

Medycyna Weterynaryjna.

ZARNOWSKI, E., 1945.—"W sprawie t.zw. pękania skóry u koni." [Correspondence.] 1 (8), 262. [In Polish.]

In Poland, certain skin eruptions in horses are due to *Parafilaria multipapillosa*. The disease has been observed only in horses originating in Russia. C.R.

Wiener Tierärztliche Monatsschrift.

BAUMANN, R., 1946.—"Beobachtungen beim parasitären Sommerbluten der Pferde." 33 (2), 52–55. [English and French summaries p. 55.]

The so-called parasitic "summer bleeding" of horses seen in Greece was caused by the piercing of the skin by female *Parafilaria multipapillosa* for the purpose of egg deposition. *Musca* species swarm on the bleeding spots and act as intermediate hosts. Microfilariae of this worm do not appear in the blood; if embryos are found they are attributable to other filariae. R.T.L.

Annales de Parasitologie Humaine et Comparée.

METIANU, T., 1949.—"Considérations sur la parafilariose hémorragique des bovins. *Parafilaria bovicola* en Roumanie." 24 (1/2), 54–59.

Metianu reports on a haemorrhagic dermatitis of parasitic origin in cattle which appears to have a wide distribution in Rumania, and was observed in 3% of 410 animals examined. The lesions which are apparently caused by *Parafilaria bovicola* consist of nodules about the size of a hazel-nut, usually 1 to 10 in number, situated most frequently on the neck, fore-leg and dorsal region of the animal. These become haemorrhagic and a small aperture, 0·5–1·0 mm. in diameter, appears at the tip of the nodule, through which the anterior end of the female worm protrudes for egg deposition. The eggs hatch out soon after they are deposited and the larvae are probably picked up by dipterous insects and develop in them. The author believes that the condition described by Faure in cattle in Morocco and attributed to *Setaria haemorrhagica* was in reality caused by *Parafilaria bovicola*. He describes and illustrates the morphology of this helminth and its larvae. J.J.C.B.

Indian Veterinary Journal.

RAMANUJACHARI, G. & ALWAR, V. S., 1954.—"Further observations on parafilariasis(?) of elephants." 31 (3), 206–209.

Haemorrhagic filariasis in elephants is endemic in the forest areas of Nilambur, Ooty and especially Wynad in Madras State. The adults occur in soft subcutaneous nodules about the size of a gooseberry on the lateral and ventral aspects of the abdomen and to a less extent on the outer aspect of the thighs. Blood oozes from the nodules and teems with unsheathed microfilariae. The nodules become fibrosed and hardened and may become encysted. The bleeding nodules are centres of chronic inflammation and severe pruritus. Portions of a female worm were recovered from a nodule removed under local anaesthesia and the parasite is tentatively diagnosed as a species of *Parafilaria*. R.T.L.

Wiener Tierärztliche Monatsschrift.

BAUMANN, R., 1955.—"Beobachtungen über das Vorkommen von *Parafilaria multipapillosa* in Österreich." 42 (3), 168–170. [English, French & Italian summaries pp. 169–170.]

Baumann describes summer bleeding in horses caused by *Parafilaria multipapillosa*. He gives the diagnosis, discusses possible transmission by flies and reports a case from the Austrian Tyrol. M.Mcn.

Atti della Società Italiana delle Scienze Veterinarie.

BATTELLI, C., 1955.—"Segnalazione della parafilariosi nello zebù dell'Eritrea." 8, 600–603. [English & French summaries p. 603.]

Current Science. Bangalore.

SRIVASTAVA, H. D. & DUTT, S. C., 1959.—"Parafilariasis in buffaloes caused by *Parafilaria sahaii* n.sp." [Correspondence.] 28 (3), 128–129.

The anterior portion of a female *Parafilaria* ½ in. to ¾ in. long, was recovered from a cutaneous abscess in a buffalo from Namkum, Bihar, India. Srivastava & Dutt tentatively assign it to a new species based on the presence of about ten transverse series of cuticular tubercles extending 50 μ from the anterior end. No illustration is given. R.W.T.

Trudi Vsesoyuznogo Instituta Gelmintologii im. K.I. Skryabina.

VASILKOV, G. V., 1959.—[Differential diagnosis of the larvae of *Parafilaria*, *Setaria* and *Onchocerca*.] 6, 3–6. [In Russian: English summary pp. 5–6.]

To facilitate identification of the four filariid species parasitic in horses, namely, *Setaria equina*, *Parafilaria multipapillosa*, *Onchocerca cervicalis* and *O. reticulata*, Vasilkov describes the three types of larvae from material cultured in the laboratory and also collected directly from the host. Only *Setaria* larvae were found in venous blood and only *Onchocerca* larvae in the skin; in blood taken from open wounds (caused by the females perforating the skin) numerous eggs and occasional larvae of *Parafilaria* were present but blood samples from the vein and ear and skin snips from the same horses were negative for *Parafilaria*. G.I.P.

Trudi Vsesoyuznogo Instituta Gelmintologii im. K.I. Skryabina.

VASILKOV, G. V., 1959.—[Study of the epizootiology of parafilariasis of horses.] 6, 31–37. [In Russian: English summary p. 37.]

Parafilariasis occurs in the south and south-eastern regions of the U.S.S.R. where the climate is warm and temperate. The characteristic skin lesions do not occur in horses under two years old and these symptoms appear from April until October with occasional cases in November. Eggs were not observed to hatch below 18°C. N.J.

BERTA, S. & SZABÓ, J., 1960. "Adatok, a lovak nyári vérzése (parafilariosisa) hazai előfordulásáról és klinikumáról." Magyar Állatorvosok Lapja, 15 (7), 270–274. [English and Russian summaries p. 274.]

The disease caused by the emergence of sexually mature forms of *Parafilaria multipapillosa* to the surface of the skin for oviposition is wide-spread in Hungary; it affects both oriental and occidental breeds of horses and shows an increasing incidence with age. The parasites occur superficially or deep in the loose connective tissue between the muscles of the skin rather than in the subcutaneous tissue. There is no eosinophilia and no microfilariae are found in the blood, but blood issuing from the vessels may contain eggs with first-stage larvae as well as free larvae. Infection is probably carried by day-biting insects. Intravenous injections of 1·75% antimonyl tartrate or of 0·5% procaine were ineffective but good results were obtained by bringing the parasites to the surface by infiltrating a 2 to 4% solution of procaine 3 to 4 cm. deep at the sites of bleeding. I.S.

SCHANZEL, H. & ZAVADIL, R., 1961. "Parafilarióza koní." *Sb. vyt. Sk. zemld. Brnĕ, Rada B*, 9 (3/4), 215–217. [German & Russian summaries p.217.]

The authors report, for the first time for Czechoslovakia, the occurrence of *Parafilaria multipapillosa* in a stud horse. Repeated treatment with the antimony compound Corystibin was without effect, the infection disappearing spontaneously in the 3rd year. G.I.P.

PATNAIK, M. M. & PANDE, B. P., 1963. "A note on parafilariasis in buffalo, *Bos (Bubalus) bubalis*." **Journal of Helminthology**, 37 (4), 343–348.

Skin nodules containing *Parafilaria bovicola* from 12 buffaloes from Orissa were sectioned for histological study. Female worms live in subcutaneous connective tissue and when gravid move into the dermis resulting in an haemorrhagic nodule. Tunnels are present in the nodules. The inflammatory reaction consists of a marked infiltration of lymphocytes, neutrophils and, rarely, eosinophils. Fluid collects in the surrounding tissues. Nodules which become broken are subject to secondary infection. The authors believe that *P. sahaii* is a synonym of *P. bovicola*. R.C.A.

PEREPYATKO, Y. G., 1963. [Treatment of parafilariasis in horses.] [Abstract.] **Veterinariya**, 40 (4), 42. [In Russian.]

In horses skin lesions due to *Parafilaria* disappeared after two applications of hexachloran. In the following year lesions reappeared on some horses; application of hexachloran was again effective. C.R.

GIBSON, T. E., PEPIN, G. A. & PINSENT, P. J. N., 1964. "*Parafilaria multipapillosa* in the horse." **Veterinary Record**, 76 (28), 774–777.

A 5-year-old Budyonovsky mare recently imported from Russia was found to be infected with *Parafilaria multipapillosa*. Clinical features and diagnostic tests are described and the geographical distribution of *P. multipapillosa* is given. Treatment with diethylcarbamazine was unsuccessful. Further research on the life-cycle of *P. multipapillosa* may show why this parasite has apparently not established itself in Britain, although it has been found in a number of imported horses during the last 60 years. L.E-L.

OLIVER, D. F., 1964. "*Parafilaria multipapillosa* in the horse." [Correspondence.] **Veterinary Record**, 76 (30), 834.

Lesions which appeared on the skin of a 4-year-old Russian horse of the Budyonovsky strain were similar to those caused by *Parafilaria multipapillosa* and described by Gibson *et al.*, 1964 [see No. 1 above]. The lesions disappeared after each of 2 courses of diethylcarbamazine at the recommended dosage rates but reappeared later. J.W.S.

PIENAAR, J. G. & HEEVER, L. W. VAN DEN, 1964. "*Parafilaria bovicola* (Tubangui 1934) in cattle in the Republic of South Africa." **Journal of the South African Veterinary Medical Association**, 35 (2), 181–184.

This is the first report of *Parafilaria bovicola* in cattle in South Africa. The lesions occur only in the subcutis on the back. They are irregular, oedematous and 7·5 to 15·0 mm. in diameter. There is no inflammatory reaction. The dead parasites are surrounded by a ring of degenerative polymorphonuclear cells, some of which are within the worms. There is a zone of macrophages, outside which is young connective tissue and some fibroblasts. Numerous lymphocytes, some plasma cells and a few eosinophils but no giant cells surround the lesion. Tract lesions are also seen with a central core of necrotic debris and fibrin, and with eosinophilic and macrophagic infiltration. No skin changes are found. The importance of the worm in meat inspection is that the lesions must be trimmed, thus causing blemishes and impairing the keeping qualities, leading to early spoilage. M.R.B.

SAHAI, B. N., SINGH, S. P. & SRIVASTAVA, V. K., 1965. "Chemotherapy of parafilariasis in bovines." *Indian vet. J.*, 42 (11), 881–883.

Sodium antimony tartrate, Neguvon and antrypol were tested against *Parafilaria bovicola*; only sodium antimony tartrate proved effective. Following treatment with 20 ml. of 2% solution of sodium antimony tartrate given intravenously twice a week for 3 weeks, 7 of 9 animals did not show clinical symptoms. 5 of 15 animals treated with Neguvon at the rate of 1 gm. per kg. body-weight on 6 alternate days were free of clinical symptoms and 2 of 30 animals were free of symptoms following treatment with antrypol at the rate of 0·5 gm. per 45 kg. as a 10% solution given intravenously and followed by a dose of 0·25 gm. per 45 kg. 2 weeks later. Toxicity was noted for Neguvon. Infected control animals were kept under observation during the trials. T.Y.

SMIRNOV, P. V., 1965. [*Parafilaria* infection in cattle.] *Veterinariya*, 42 (4), 54. [In Russian.]

KHAJURIA, R. R., 1966. "Incidence and control of parafilariasis in bovines in Jammu Province." *Indian vet. J.*, 43 (8), 749–750.

Cows and buffaloes infected with *Parafilaria bovicola* or *P. sahaii* were successfully treated with five 48-hourly, deep intramuscular injections of 30 c.c. of anthiomaline or 3 subcutaneous injections of 50 c.c. of antimosan at intervals of 4 days. Supportive treatment of 100 c.c. of calcium borogluconate with each injection of antimosan is recommended for quicker results. T.Y.

DEORANI, V. P. S. & DUTT, S. C., 1967. "Histopathology of parafilariasis in mules." [Correspondence.] *Curr. Sci.*, 36 (9), 240–241.

The histopathology of parafilariasis ("summer bleeding" caused by *Parafilaria multipapillosa*) in Italian mules imported into India was studied. The worms do not cause any significant cellular changes in the cutaneous layers and the bleeding occurs only when the epidermis is punctured by the females for oviposition. M.S.J.

THOMSETT, L. R., 1968. "*Parafilaria multipapillosa* in the horse." [Correspondence.] *Vet. Rec.*, 83 (1), 27–28.

The presumed first demonstration in Britain of adult *Parafilaria multipapillosa* from lesions on a 5-year-old mare from Russia is recorded. J.N.O.

ANNOTATED BIBLIOGRAPHIES

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The following bibliographies are obtainable from the Commonwealth Institute of Helminthology, The White House, 103 St. Peter's Street, St. Albans, Herts, England.

1 *Cysticercus ovis* and *Taenia ovis*.
59 references covering 1932—1969. £0.50 ($1.30)

2 *Taenia saginata* and *T. solium* in Lebanon, Turkey and Yugoslavia.
50 references covering 1932—1969. £0.50 ($1.30)

3 Helminthology in Iraq.
71 references covering 1932—1969. £0.70 ($1.80)

4 Humpsore (Stephanofilariasis) in domestic animals.
71 references covering 1932—1969. £0.70 ($1.80)

5 Skin lesions in domestic animals caused by *Elaeophora*, *Rhabditis* and *Parafilaria*.
55 references covering 1932—1969. £0.50 ($1.30)

Suggestions of topics suitable for future bibliographies will be welcomed.
Prices include postage by surface mail.